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EXAMINER

YAM, STEPHEN K

ART UNIT

PAPER NUMBER

2878

DATE MAILED: 10/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/856,815

Applicant(s)

BAYHA ET AL.

Examiner

Stephen Yam

Art Unit

2878

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 August 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 28 August 2002 is: a) ☒ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

This action is in response to Amendments and remarks filed on August 28, 2002. Claims 1-18 are currently pending.

1. Claim 18 is objected to because of the following informalities:

In Claim 18, line 1, "the light emitting diode" lacks proper antecedent basis. For examination purposes, Examiner assumes an additional limitation in Claim 18 where the radiation source is a light emitting diode.

Appropriate correction is required.

Drawings

2. The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on August 28, 2002 have been accepted. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in-

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or

(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

4. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 102(b) as being unpatentable by Nakamura et al. US Patent No. 4,636,643.

Regarding Claim 1, Nakamura et al. teach a device for detecting particles on a windshield (2) of a motor vehicle with a radiation source (1) (see Fig. 1 and Fig. 2) which emits optical rays onto the windshield, a photodetector (5 or 9) which receives a portion of the rays emitted onto the windshield, and a control unit (7 and 10) which manages the radiation source and analyzes the rays received by the photodetector. Nakamura et al. also teach the radiation source positioned outside the field of vision of a driver of the vehicle (see Fig. 1) and aligned in such a way that the light rays from the radiation source strike the windshield in the area of the field of vision, and that the photodetector is pointed at the area of the windshield which the optical rays from the radiation source strike (see Fig. 1).

Regarding Claim 2, Nakamura et al. teach the radiation source formed as a light emitting diode (see Col. 3, line 30).

Regarding Claims 3 and 4, Nakamura et al. teach the photodetector including several receiving units (5) and formed as optoelectronic arrays (see Col. 3, lines 63-65).

Regarding Claims 5 and 6, Nakamura et al. teach a lens (see Col. 3, line 34-37) located in the direction of propagation of the beams reflected from the particles in front of the receiving units for focusing the beams.

Regarding Claim 8, Nakamura et al. teach the radiation source emitting optical rays with a wavelength in the infrared range (see Col 3, lines 27-33).

Regarding Claim 9, Nakamura et al. teach the control unit (7 and 10) managing the radiation source (see Col. 3, lines 59-61) in such a way that the type of particles can be determined from the rays received by the photodetector.

Regarding Claim 10, Nakamura et al. teach the control unit analyzing the rays received by the detector so that the type of particles can be determined (see Col. 3, line 67 to Col. 4, line 2).

5. Claims 1-6, 8-10, 12, 14 and 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Stam et al. US Patent No. 5,923,027.

Regarding Claim 1, Stam et al. teach a device for detecting particles on a windshield of a motor vehicle with a radiation source (66) (see Fig. 2) which emits optical rays onto the windshield (see Fig. 3), a photodetector (32) which receives a portion of the rays emitted onto the windshield, and a control unit (see Col. 6, lines 6-15) which manages the radiation source and analyzes the rays received by the photodetector. Stam et al. also teach the radiation source positioned outside the field of vision of a driver of the vehicle (see Fig. 3) and aligned in such a way that the light rays from the radiation source strike the windshield in the area of the field of vision, and that the photodetector is pointed at the area of the windshield which the optical rays from the radiation source strike (see Fig. 1 and 3).

Regarding Claim 2, Stam et al. teach the radiation source formed as a light emitting diode (see Col. 10, lines 25-26).

Regarding Claims 3 and 4, Stam et al. teach the photodetector including several receiving units and formed as optoelectronic arrays (see Col. 5, line 45).

Regarding Claims 5 and 6, Stam et al. teach a lens (33) (see Fig. 2) located in the direction of propagation of the beams reflected from the particles in front of the receiving units for focusing the beams.

Regarding Claim 8, Stam et al. teach the radiation source emitting optical rays with a wavelength in the infrared range (see Col 10, lines 24-26).

Regarding Claim 9, Stam et al. teach the control of the radiation source (see Col. 10, lines 32-34) in such a way that the type of particles can be determined from the rays received by the photodetector. Although Stam et al. does not specifically mention the control unit managing the radiation source, it is inherent that the radiation source is managed by the control unit to synchronize the radiation source activation with the image capture process from the photodetector.

Regarding Claim 10, Stam et al. teach the control unit analyzing the rays received by the detector so that the type of particles can be determined (see Col, 6, lines 23-33).

Regarding Claim 12, Stam et al. teach the device as an integral part of a rearview mirror module in the vehicle (see Fig. 1).

Regarding Claim 14, Stam et al. teach (see Fig. 6) the control unit operably associated with a windshield cleaning system (40) of the vehicle such that the windshield cleaning system is activated when the control unit detects dirt on the windshield (see Col. 3, lines 53-55).

Regarding Claim 16, Stam et al. teaches the use of a visible LED (see Col. 10, lines 59-60), which inherently possesses a plurality of wavelengths within a visible spectrum range.

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 7 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stam et al.

Regarding Claim 7, Stam et al. teach a device for detecting particles on a windshield of a motor vehicle with a radiation source, photodetector, and control unit, where the radiation source is positioned outside the field of vision of a driver and the photodetector is pointed at the area of the windshield which the optical rays from the radiation source strike. Stam et al. also teach the possibility of using a light source emitting visible light (see Col. 10, lines 22-24) which inherently comprise the wavelength spectrum of about 350nm to 800nm. Stam et al. do not teach the actual use of a light source emitting visible light. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a visual light source in the image sensor of Stam et al., to allow reflected detection for windshields of various absorption characteristics as taught by Stam et al. (see Col. 10, lines 22-24).

Regarding Claim 11, Stam et al. teach a device for detecting particles on a windshield of a motor vehicle with a radiation source, photodetector, and control unit, where the radiation source is positioned outside the field of vision of a driver and the photodetector is pointed at the area of the windshield which the optical rays from the radiation source strike. Stam et al. does not teach the device as an integral part of an interior light module in the vehicle. It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the

device with the interior light module, as the interior light module is another location in a vehicle with direct visual access to the windshield in the area of the field of vision and out of the field of vision of a driver of the vehicle.

8. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stam et al. in view of Hegyi US Patent No. 5,703,568.

Stam et al. teach a device for detecting particles on a windshield of a motor vehicle with a radiation source, photodetector, and control unit, where the radiation source is positioned outside the field of vision of a driver and the photodetector is pointed at the area of the windshield which the optical rays from the radiation source strike. Stam et al. do not teach the device connected over a bi-directional data bus to a superordinate control unit in the vehicle. Hegyi teaches an image sensor for detecting particles on a windshield connected to a superordinate control unit (46) (see Fig. 3). Although Hegyi does not mention the connection of the device to the superordinate control unit over a bi-directional data bus, it is inherent that a data bus is used to convey data between the device and the superordinate control unit, and the superordinate control unit both sends and receives data bi-directionally to the device to obtain sensor data from the device and to control the device. It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the superordinate control unit over a bi-directional data bus of Hegyi with the device of Stam et al., to provide feedback for other vehicle functions and enable the activation and deactivation of the device.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stam et al. in view of Fossum - Image Capture Circuits in CMOS.

Stam et al. teach a device for detecting particles on a windshield comprising a radiation source aligned to strike the windshield and a photodetector to capture rays from the radiation source. Stam et al. also teach the photodetector as a CMOS array. Stam et al. do not teach the photodetector as a CCD array. Fossum teaches the architecture of a CCD array as having a smaller pixel size than a CMOS array (see Col. 1, lines 23-27). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a CCD image converter as the photodetector in the device of Stam et al., to define a smaller pixel size to gain a higher resolution image to minimize false particle readings.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stam et al. in view of Vachss US Patent No. 5,313,072.

Stam et al. teach the device as taught in Claim 2, according to the appropriate paragraph in the prior action. Stam et al. do not teach the light emitting diode operable to emit optical rays having different intensities. Vachss teaches (see Fig. 1) a device for detecting particles on a windshield of a vehicle using a light emitting diode (12) (see Col. 2, lines 49-52), and pulsing the light source (see Col. 3, lines 53-57). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the light emitting diode emit optical rays having different intensities as taught by Vachss in the device of Stam et al., to distinguish the light rays from ambient light rays such as sunlight to accurately detect only the light emitted from the light emitting diode.

11. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stam et al. in view of Breed et al. US Patent No. 5,845,000.

Stam et al. teach the device as taught in Claim 11, according to the appropriate paragraph in the prior action. Stam et al. do not teach the light emitting diode positioned such that the optical rays strike the windshield at a similar angle with respect to a driver's line of sight. Breed et al. teach (see Fig. 1D) a device where a light emitting diode (113) (see Col. 5, lines 51-52 and Col. 13, lines 3-4) is positioned such that the optical rays strike the windshield at a similar angle with respect to a driver's line of sight (see Fig. 1D), mounted in the interior light module of the vehicle (see Col. 13, lines 10-12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to position the light emitting diode so the optical rays strike the windshield at a similar angle with respect to a driver's line of sight as taught by Breed et al. in the device of Stam et al., to prevent the light from interfering with the driver's view on the windshield and hampering his/her driving abilities.

Response to Arguments

12. Applicant's arguments filed August 28, 2002 have been fully considered but they are not persuasive.

Regarding the 102(b) rejection of Claims 1-6 and 8-10 over Nakamura et al. US Patent No. 4,636,643, Applicant argues that Nakamura et al. does not teach a control unit that both manages the radiation source and analyzes the rays received by the photodetector, but instead has **two** control units inst. Nakamura et al. teaches the "infrared-emitting means for emitting an

infrared beam in response to a signal from an emitting control circuit 7" (see Col. 3, lines 62-65). Also, the claim language in Claim 1 does not prevent from the combination of the emitting control circuit 7 and the microprocessor 10 collectively as a "control unit" in the device of Nakamura et al. Hence, Examiner maintains that Nakamura et al. does teach the control unit as (7 and 10) which performs the functions as claimed in Claim 1.

Regarding the 102(e) rejection of Claims 1-6, 8-10, and 12 over Stam et al. US Patent No. 5,923,027, Applicant argues that Stam et al. do not teach the timing and control circuitry in electrical communication with the LED. Examiner maintains that Stam et al. does teach the control unit which performs the functions as claimed in Claim 1. Stam et al. also teach the use of an "illuminator" when an image is taken, implying that a timing and control means is required to synchronize the illuminator and the image capturing means (See Col. 9, lines 59-66). Stam et al. also teach the synchronization of an LED with the imaging process (see Col. 10, lines 32-34). Therefore, Examiner does not see how timing control of both an LED and an imager cannot occur when both components are synchronized to an imaging process.

Regarding the 103(a) rejection of Claims 7 and 11 over Stam et al., Examiner maintains the rejection as Stam et al. anticipates Claim 1 according to the reasons stated above. In addition, regarding Claim 11, Examiner maintains that a device integral with the interior light module of a vehicle is well known in the art, and cites Breed et al. US Patent No. 5,845,000 wherein Fig. 1B shows a light transmitter/receiver module 113 mounted on the roof of the vehicle capturing light reflected from the windshield (see Col. 11, lines 7-10), "one such sensor placed by the dome light or any other central position in the vehicle roof such as 113" (see Col. 13, lines 10-13).

Regarding the 103(a) rejection of Claim 13 over Stam et al. in view of Hugyi et al. US Patent No. 5,703,568, Examiner maintains the rejection as Stam et al. anticipates Claim 1 according to the reasons stated above.

Thus, as set forth above, this final rejection is proper.

Conclusion


13. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen Yam whose telephone number is (703)306-3441. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (703)308-4852. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7724 for regular communications and (703)308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

SY 
October 25, 2002


DAVID PORTA
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